

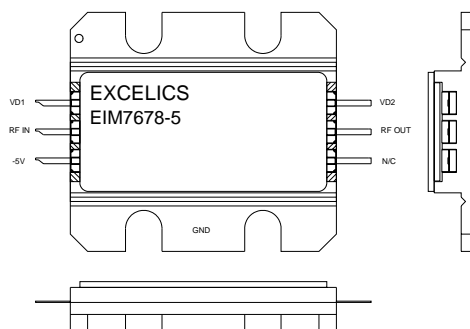
7.6 – 7.8 GHz Multi-Stage Power Amplifier

FEATURES

- 7.6– 7.8GHz Operating Frequency Range
- 37.0dBm Output Power at 2dB Compression
- 31.0 dB Typical Power Gain @2dB gain compression
- Non-Hermetic Metal Flange Package

APPLICATIONS

- Point-to-point and point-to-multipoint radio
- Military Radar Systems



Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_b = 25 °C, 50 ohm, VD1=7V, VD2=10V, V_{gg}=-5V)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	7.6		7.8	GHz
P_{2dB}	Output Power at 2dB Gain Compression	36.0	37.0		dBm
G_{2dB}	Gain @2dB gain compression	29	31		dB
ΔGain	Gain Flatness		±1.0		dB
Input RL	Input Return Loss		-12	-8	dB
Output RL	Output Return Loss		-15	-10	dB
VD1	Drain Supply Voltage 1		7		V
VD2	Drain Supply Voltage 2		10		V
I_{DQ1}	Quiescent Drain Current 1		200		mA
I_{DQ2}	Quiescent Drain Current 2		2600	3000	mA
V_{gg}	Gate Supply Voltage		-5		V
R_{th}	Thermal Resistance		2.4		°C/W
T_b	Operating Base Plate Temperature	- 30		+ 80	°C

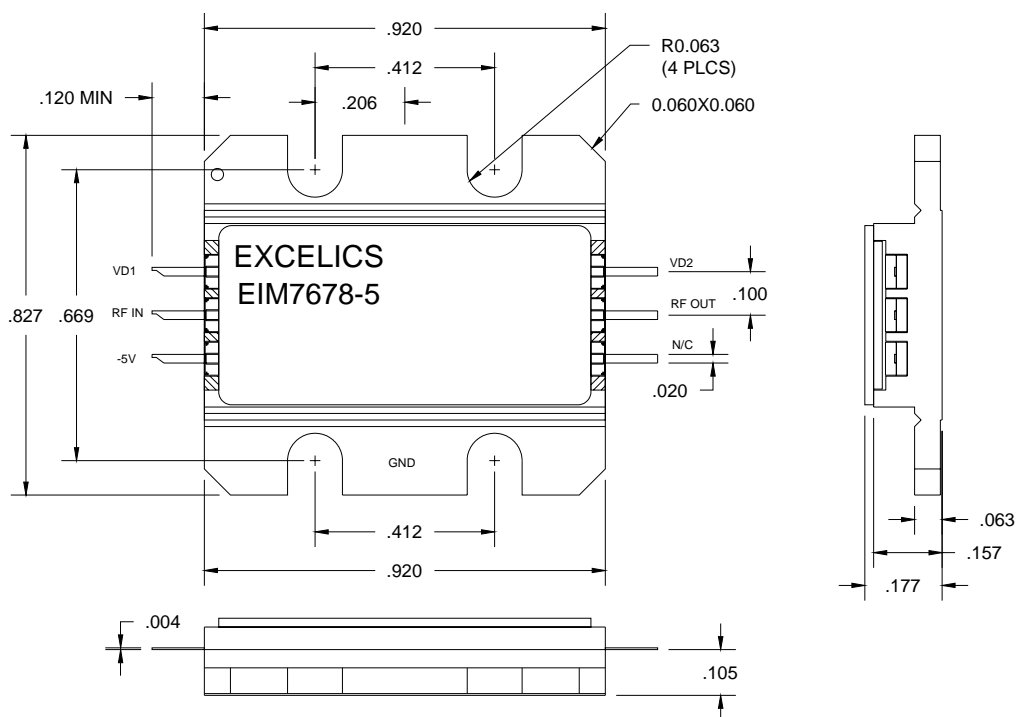
MAXIMUM RATINGS @25°C^{1,2}

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS ^{1,2}
V _{D1}	Drain Supply Voltage 1	12V	8V
V _{D2}	Drain Supply Voltage 2	14V	10V
V _{gg}	Gate Supply Voltage	-10V	-6 V
I _{gg}	Gate Current	150mA	50 mA
P _{IN}	Input Power	20dBm	@ Pout 2dB compression
T _{CH}	Channel Temperature	175°C	175°C
T _{STG}	Storage Temperature	-65/175°C	-65/175°C
P _T	Total Power Dissipation	37.5W	37.5W

Notes: 1. Operating the device beyond any of the above rating may reduce MTTF and cause permanent damage.

2. Bias conditions must also satisfy the following equation $V_{dd} \cdot I_{dd} < (T_{CH} - T_b) / R_{TH}$

Package Dimension and Pin Assignment



Dimensions are in inches
 * NC: No connection inside the package

Specifications are subject to change without notice.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085

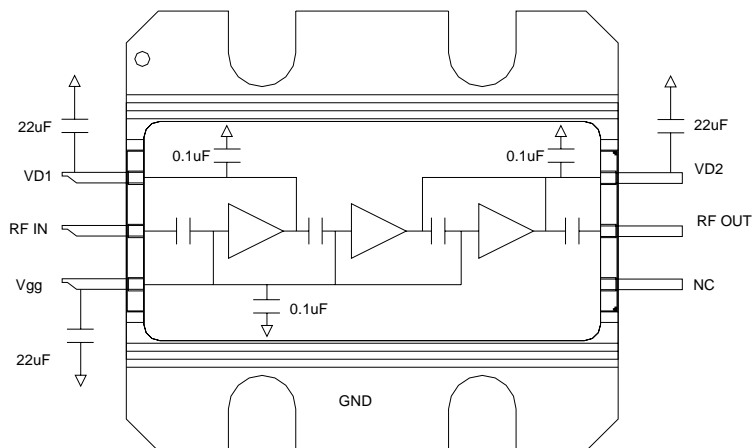
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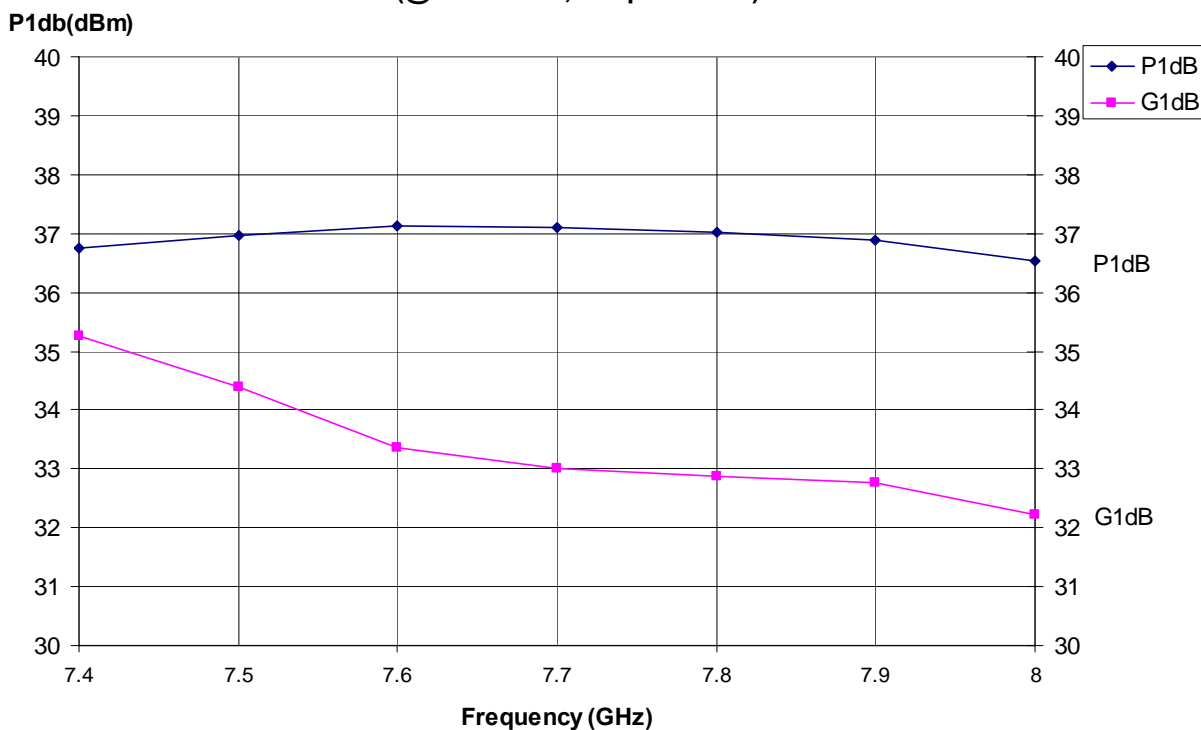
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Application Note

1. The package should be screwed onto a good heat sink and ground
2. Turn on/off sequence is required:
 - to turn on: apply -5V first, then +7V and +10V.
 - to turn off: turn +7V and +10V off first, then turn -5V off
3. Recommended External Bias Circuit and Internal Block Diagram



Typical Performance: P1dB & G1dB (@Vds=10.0V, Idsq=2700mA)



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EIM7678-5

ISSUED 08/11/2008

7.6 – 7.8 GHz Multi-Stage Power Amplifier

S-PARAMETERS (VD1=10V, I_{DQ1} =2700mA, VD2=7V, I_{DQ2} =180mA)

Freq GHz	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
6.0	0.2739	-126.02	7.8680	157.28	0.0038	78.75	0.1621	-92.98
6.2	0.2135	-143.95	14.1273	65.93	0.0025	-121.90	0.1503	-121.39
6.4	0.1461	-152.50	23.4034	-28.46	0.0025	-128.06	0.1000	-153.57
6.6	0.1155	-139.22	35.9707	-127.90	0.0027	-59.16	0.0534	-49.77
6.8	0.1449	-135.08	47.3280	129.69	0.0017	45.82	0.1889	-85.17
7.0	0.1663	-148.04	53.8634	28.59	0.0033	45.58	0.2179	-128.72
7.2	0.1563	-151.11	53.5623	-69.47	0.0004	103.89	0.1500	-142.99
7.4	0.1880	-153.11	49.5049	-160.95	0.0017	-99.64	0.1878	-135.61
7.6	0.2437	-170.31	46.4079	112.81	0.0045	-20.74	0.2598	-156.35
7.8	0.2399	159.50	44.4597	23.45	0.0038	149.12	0.2348	171.42
8.0	0.1948	142.63	37.8991	-63.19	0.0029	158.82	0.1796	163.79
8.2	0.1805	138.04	32.6948	-142.76	0.0029	24.78	0.1824	165.68
8.4	0.1789	127.05	31.7834	139.44	0.0068	59.47	0.2126	154.82
8.6	0.1849	110.83	33.6484	55.37	0.0014	23.03	0.2254	144.31
8.8	0.1373	85.62	34.7505	-39.89	0.0040	-81.51	0.2497	130.34
9.0	0.0932	91.29	29.2272	-139.08	0.0036	-81.65	0.2166	108.53

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